

Docket No.: HI-34

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :  
Se Jin HWANG :  
Serial No.: New U.S. Application :  
Confirm. No.: Unassigned :  
Filed: August 30, 2001 :  
For: CPU SCHEDULING METHOD AND APPARATUS

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D. C. 20231

Sir:

Prior to initial examination on the merits, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Please amend the specification by replacing paragraphs as follows:

A. Specification Paragraphs With Mark-ups to Show Changes Made

The following are mark-ups to show changes made to paragraph(s) starting at page 7, paragraph 20, line 1 and ending at page 7, paragraph 21, line 9:

[20] Figure 2 is a block diagram illustrating the construction of an embedded system 1 in accordance with a preferred embodiment of the present invention. Referring to Figure 2, an embedded system [1□] 1' preferably includes [a CPU 2, e.g.] a microprocessor or CPU 2 built therein[,] for controlling the overall operation of the embedded system [1□] 1', an operating [software/system S/W] software system (S/W) 3 for operating the embedded system [1□] 1', and a memory 5 [that is stored a] for storing information, [a] time conditions, a queue and a scheduler queue.

[21] The CPU 2 can be equipped with a PLL 4 for controlling an operating clock of the embedded system [1□] 1'. The PLL 4 can also be used for maintaining a clock for real-time control within the CPU 2.

The following are mark-ups to show changes made to paragraph(s) starting at page 10, paragraph 29, line 6 and ending at page 10, paragraph 29, line 14:

[29] The system illustrated in Figure 3 operates by first setting the scheduling algorithm on the assumption that a first process Pj can be a currently running process and a second process Pk can be a process which can be fetched from either a Sleep queue or a Wait queue. At step 301, the clock functions Tk, Ck, Wk and Ek, Clock\_up([1□]±1), Clock\_advance(), Clock\_set(), and insert\_new\_process() of an embedded system for

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operating an algorithm of the present invention can be substituted into a scheduler function. The clock functions can then be used to control the clocks of all the processes which are included in a scheduler of the operating system 3a of the operating S/W of Figure 2 and can be executed on the CPU 2.

**B. Clean Specification Changes**

Please replace paragraph(s) starting at page 7, paragraph 20, line 1 and ending at page 7, paragraph 21, line 9:

[20] Figure 2 is a block diagram illustrating the construction of an embedded system 1 in accordance with a preferred embodiment of the present invention. Referring to Figure 2, an embedded system 1' preferably includes a microprocessor or CPU 2 built therein for controlling the overall operation of the embedded system 1', an operating software system (S/W) 3 for operating the embedded system 1', and a memory 5 for storing information, time conditions, a queue and a scheduler queue.

[21] The CPU 2 can be equipped with a PLL 4 for controlling an operating clock of the embedded system 1'. The PLL 4 can also be used for maintaining a clock for real-time control within the CPU 2.

Please replace paragraph(s) starting at page 10, paragraph 29, line 6 and ending at page 10, paragraph 29, line 14:

[29] The system illustrated in Figure 3 operates by first setting the scheduling algorithm on the assumption that a first process P<sub>j</sub> can be a currently running process and a second process P<sub>k</sub> can be a process which can be fetched from either a Sleep queue or

a Wait queue. At step 301, the clock functions Tk, Ck, Wk and Ek, Clock\_up( $\pm 1$ ), Clock\_advance(), Clock\_set(), and insert\_new\_process() of an embedded system for operating an algorithm of the present invention can be substituted into a scheduler function. The clock functions can then be used to control the clocks of all the processes which are included in a scheduler of the operating system 3a of the operating S/W of Figure 2 and can be executed on the CPU 2.

**IN THE CLAIMS:**

A. Please amend claim 8 as follows:

**Amended Claims With Mark-ups to Show Changes Made**

8. (Amended) An apparatus for scheduling a CPU, comprising:

a CPU adapted to control the overall operation of an embedded system, the CPU being equipped with a PLL for controlling an operating clock of the embedded system and maintaining a clock for a real-time control within the CPU;

an operating [s/w that is] software capable of being controlled by controller and including in the form of a process and an operating system (OS)[;], wherein the operating system (OS) [having] comprises a scheduler adapted to monitor states of all the processes executed on the CPU and to control the clock of the CPU depending on the monitored result of the states of the processes; and

a memory connected to the CPU and the [controller] operating software.

**Clean Set of Amended Claims**

8. (Amended) An apparatus for scheduling a CPU, comprising:

a CPU adapted to control the overall operation of an embedded system, the CPU being equipped with a PLL for controlling an operating clock of the embedded system and maintaining a clock for a real-time control within the CPU;

an operating software capable of being controlled by controller and including in the form of a process and an operating system (OS), wherein the operating system (OS) comprises a scheduler adapted to monitor states of all the processes executed on the CPU and to control the clock of the CPU depending on the monitored result of the states of the processes; and

a memory connected to the CPU and the operating software.

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**REMARKS**

Claims 1-11 are pending. The specification and claim 8 have been amended for clarification. Prompt examination and allowance in due course are respectfully solicited.

Respectfully submitted,  
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